

TM 11-5841-272-20

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

ALTIMETER SET, ELECTRONIC AN/APN-171A(V)1

This copy is a reprint which includes current
pages from Changes 1 and 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY
MAY 1969

WARNING

115 volts ac and 28 volts dc are applied to this equipment.

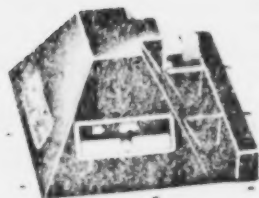
DEATH ON CONTACT

may result if safety precautions are not observed.

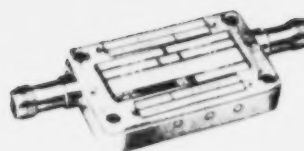
HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC 21 May 1969**ORGANIZATIONAL MAINTENANCE MANUAL
ALTIMETER SET, ELECTRONIC AN/APN-171A(V)1
(NSN 5841-00-144-7417)**

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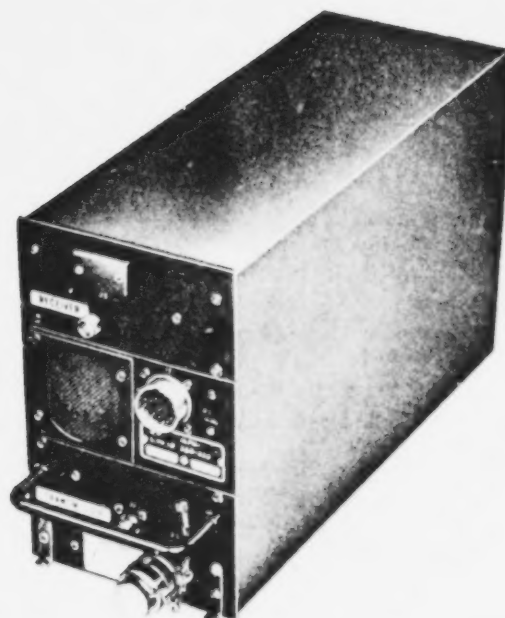
AS-1858/APN-171(V) ANTENNA



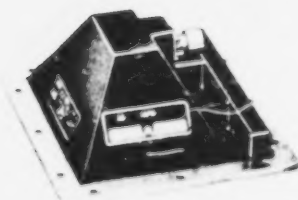
F-1263/APN-171A(V)
BAND SUPPRESSION FILTER



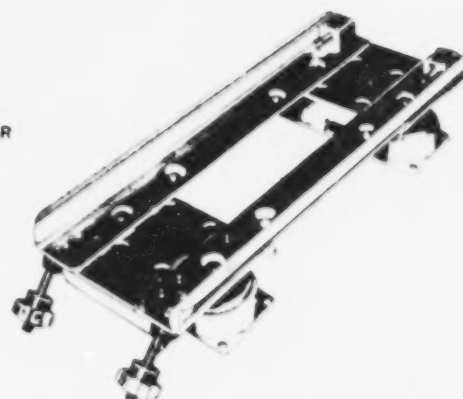
ID-1345A/APN-171(V)
HEIGHT INDICATOR



RT-804A/APN-171(V)
RECEIVER-TRANSMITTER, RADAR



AS-1858/APN-171(V) ANTENNA



MT-4167/APN-171(V) BASE, SHOCK MOUNT,
ELECTRICAL EQUIPMENT

EL 5841-272-20-1

Figure 1-1. Altimeter Set, Electronic AN/APN-171A(V)1

CHAPTER 1 INTRODUCTION

Section I. GENERAL

1-1. Scope of Manual

a. This technical manual contains operating intermediate and periodic maintenance, testing, packaging, shipping, storing, and demolition instructions required by the organizational maintenance repairman to install, use, and maintain Altimeter Set, Electronic AN/APN-171A(V)1 (altimeter set) (fig. 1-1).

b. The maintenance of the altimeter set is further described in the higher maintenance category manual.

1-2. Indexes of Publications

a. *DA Pam 310-4*. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. *DA Pam 310-7*. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. *Reports of Maintenance and Unsatisfactory Equipment*. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, the Army Maintenance Management System.

b. *Report of Item and Packaging Discrepancies*. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVSUPINST 4440.127E/AFR 400-54/MCO 4430.E.

c. *Discrepancy in Shipment Report (DISREP) (SF 361)*. Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-3.1. Reporting Errors and Recommending Improvements.

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case, a reply will be furnished direct to you.

1-3.2. Reporting of Equipment Improvement Recommendations (EIR)

If your Altimeter Set, Electronic AN/APM-171A(V)1 needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. *Purpose*. The altimeter set is an airborne, low-altitude, terrain-tracking and altitude-sensing radar system. The altimeter set uses narrow pulse transmission and leading edge tracking of the echo return pulse for a continuous indication of aircraft altitude. Accurate high resolution tracking is maintained at altitudes between

0 and 5,000 feet. Actual altitude is displayed on a servo-actuated height indicator.

b. *Use*. The altimeter set provides the pilot of an aircraft with information on distance to the nearest terrain. This altitude data enables the pilot to maintain accurate altitude reference during low level operations.

1-5. Technical Characteristics

The technical characteristics of the altimeter set are listed below.

Transmitter frequency	4,300 $\pm$ 10 megahertz (MHz)
Receiver local oscillator frequency	4,300 $\pm$ 10 MHz
Transmitter pulse width (0 to 1,000 ft)	.35 $\pm$ 25 nanoseconds
Transmitter pulse width (1,000 to 5,000 ft)	.125 $\pm$ 25 nanoseconds
Transmitter peak power (0 to 1,000 ft)	.25 to 100 watts
Transmitter peak power (1,000 to 5,000 ft)	.100 to 300 watts
Transmitter pulse repetition frequency	.10 $\pm$ 0.001 kilohertz (kHz)
Receiver bandwidth (0 to 1,000 ft)	.30 MHz
Receiver bandwidth (1,000 to 5,000 ft)	.10 MHz

1-6. Items Comprising an Operable Equipment

NSN	Qty	Nomenclature, part No. and mfr code	Weight	Depth	Width	Height	No.
NOTE							
The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.							
5841-00-144-7417		Altimeter Set, Electronic AN/APN-171A(V)1 consisting of:					1-1
5841-00-899-0817	2	Antenna AS-1858 APN-171(V): LG 81A4; 94580	1.0	6.25	5.578	2.50	1-1
5340-00-178-1406	1	Base, Shock Mount, Electrical Equipment	2.2	14.25	5.88	2.34	1-1
		MT-4167 APN-171(V): WG1000AA01; 94580					
5915-00-134-0750	1	Filter, Band Suppression F-1263 APN-171A(V): LG1026AA01; 94580	0.25	4.29	0.50	1.50	1-1
5841-00-097-0029	1	Indicator, Height ID-1345A APN-171(V): JG206D5; 94580	1.6	5.276	3.250	3.250	1-1
5841-00-097-0030	1	Receiver-Transmitter, Radar RT-804A APN-171(V): HG9050E1; 94580	13.4	13.0	4.99	7.80	1-1

1-7. Description

a. *Description of Altimeter Set.* The altimeter set consists of the components shown in figure 1-1 and listed in paragraph 1-6. The major components of the altimeter set are described below:

b. *Description of Major Components.* The altimeter set consists of one receiver-transmitter, one mounting rack, one height indicator, two antennas, and one radiofrequency interference (rfi) filter. These components are described in (1) through (5) below.

(1) *Receiver-transmitter.* The receiver-transmitter front panel contains the receiver-transmitter power and signal input connector, the transmitter RF output connector, the transmitter test connector, the receiver RF input connector, the receiver local oscillator (lo) tuning adjustment access hole (cover shown installed in fig. 1-1), and the blower fan outlet hole and screen. The transmitter test connector

has a shorting plug connector (shown installed in fig. 1-1) which shall be installed during normal operation. Two small right angle straps at the base of the front panel are attaching points for the knurled thumbscrews of the mounting rack. An air inlet hole at the rear of the cover, with the filter and screen mounted over it, provides cooling air for the receiver-transmitter internal assemblies.

(2) *Mounting rack.* The mounting rack supplied with the altimeter set is physically similar to the military MS91504 Mounting Racks. The primary difference is that the altimeter set mounting rack has additional vibration isolating capability.

(3) *Height indicator.* The altimeter set power OFF, low warning index SET, and PUSH TO TEST switches are mounted on a common shaft in the lower left-hand corner on the front of the height indicator. The LOW warning lamps are

on the lower right-hand corner on the front of the height indicator. The NO TRACK mask is on the lower right-hand quadrant of the height indicator dial. (When the dial pointer is behind this mask, other than for the initial turn on delay period, track has been lost or power has failed.) The power off indicator (striped) flag is in the center of the indicator dial, approximately $\frac{3}{4}$ inch below the pointer hub. When power is turned on, the flag disappears from view. The height indicator power from the aircraft and the power to and signals from the receiver-transmitter are provided through a connector at the rear of the height indicator.

(4) *Antennas.* Two identical antennas are required by the altimeter set to transmit and receive the RF data. Each antenna has a plastic radome cover which must remain clean and undamaged for proper antenna operation. Twelve mounting holes around the perimeter of the antenna mounting flange are for its installation in the aircraft. The RF signal connector is mounted on a sloping face of the antenna (fig. 1-1) and provides RF connection from the rfi filter or to the receiver.

(5) *Rfi filter.* The rfi filter is connected between the transmitter RF output connector and the transmitter antenna. It suppresses spurious RF signals in the transmitting cables.

1-8. System Application

(fig. 1-2)

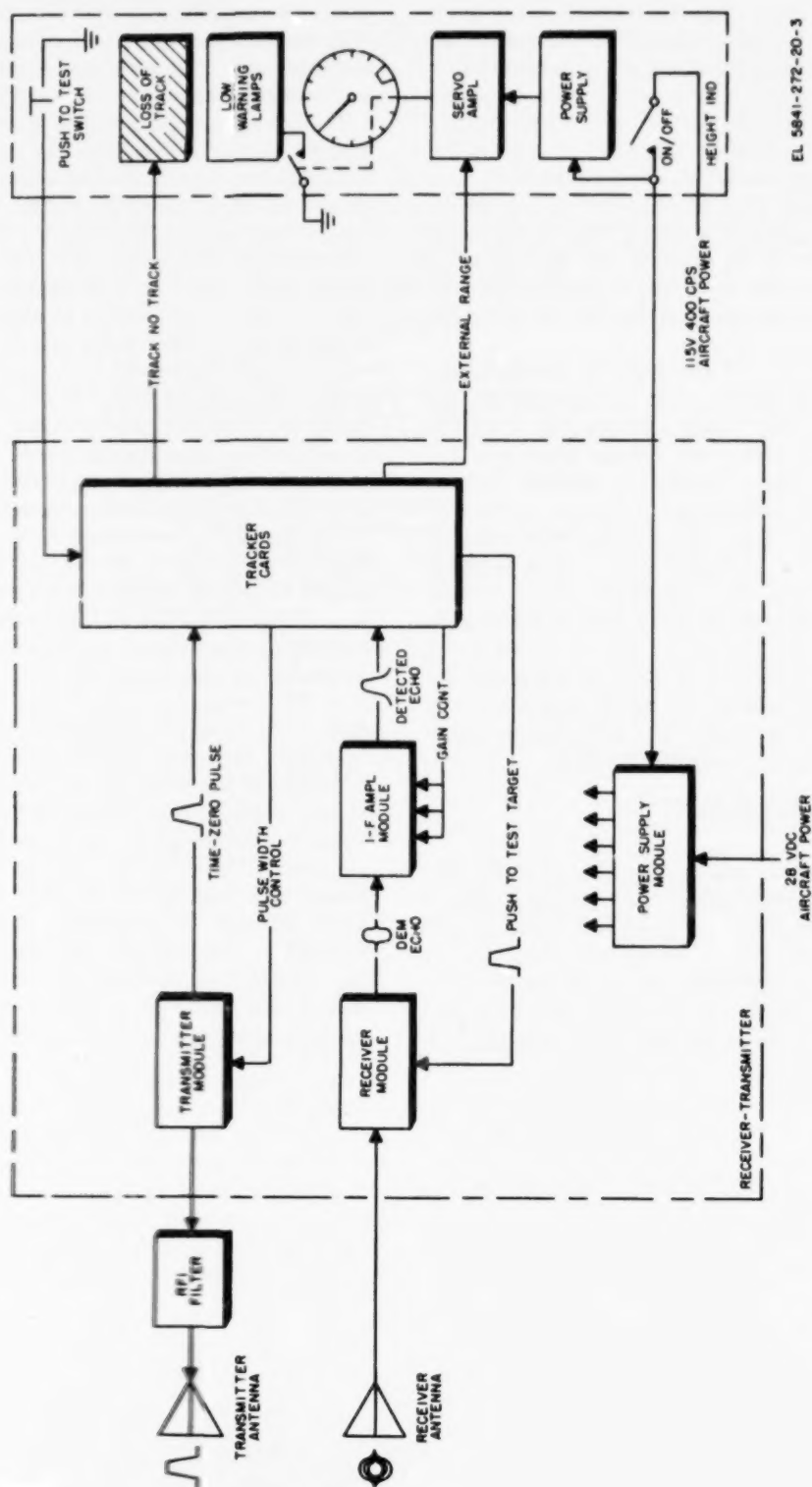
a. The altimeter set provides low altitude, absolute height indications on the height indicator mounted on the cockpit control panel. Distance to the nearest terrain is automatically computed by determining the time difference between the leading edges of the transmitted and received pulses and converting the difference to an analog volt-

age. The analog voltage drives the height indicator servomechanism and positions the pointer over the proper altitude reading on the height indicator dial. The altimeter set has two operating modes: normal terrain tracking, and self-test.

b. Normal terrain tracking is maintained when aircraft power to the altimeter set is applied and the height indicator OFF switch is on. A 2-minute minimum delay is incorporated between initial power turn-on and the time the altimeter set begins to track the terrain. The altimeter set maintains terrain track up to 5,000 feet. The altimeter set loses track and begins to search for a target at altitudes between 5,000 and 5,500 feet.

c. The self-test mode is initiated when the operator depresses the PUSH TO TEST switch on the front of the height indicator. This blocks the terrain reflections and compares the time difference between the time-zero (transmitted pulse) and a delayed time-zero (simulated echo) pulse. The difference is converted to an analog voltage equivalent to 100 ± 15 feet of altitude on the height indicator. The self-test mode is operable in the air or on the ground. It allows the pilot and maintenance personnel to perform a check of the altimeter set operation.

d. The height indicator power OFF switch applies 115-volt 400-Hz aircraft power to the height indicator and the receiver-transmitter circuits. The 28-volt aircraft power is applied to circuits in the receiver-transmitter. When the 2-minute delay (after power on) is completed and track is established, a relay in the receiver-transmitter closes and applies 28 volts dc to the lighting, LOW altitude warning lamp, and power off flag circuits in the height indicator. The power-on sequence is then completed, track has been established, and the height indicator indicates aircraft altitude above the nearest terrain.



EL 5841-272-20-3

Figure 1-2. Altimeter Set, Electronic AN/APN-171A(V)1, block diagram.

CHAPTER 2

OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Unpacking

Typical packaging techniques and materials for the receiver-transmitter are illustrated in figure 2-1. The other components of the altimeter set are packaged similarly. No special unpacking instructions are required. Use normal care in handling the equipment to prevent damage. Components should be left in the shipping container until installed in the aircraft to provide shock and handling protection during movement. Retain packaging materials for use in shipping units.

2-2. Checking Unpacked Equipment

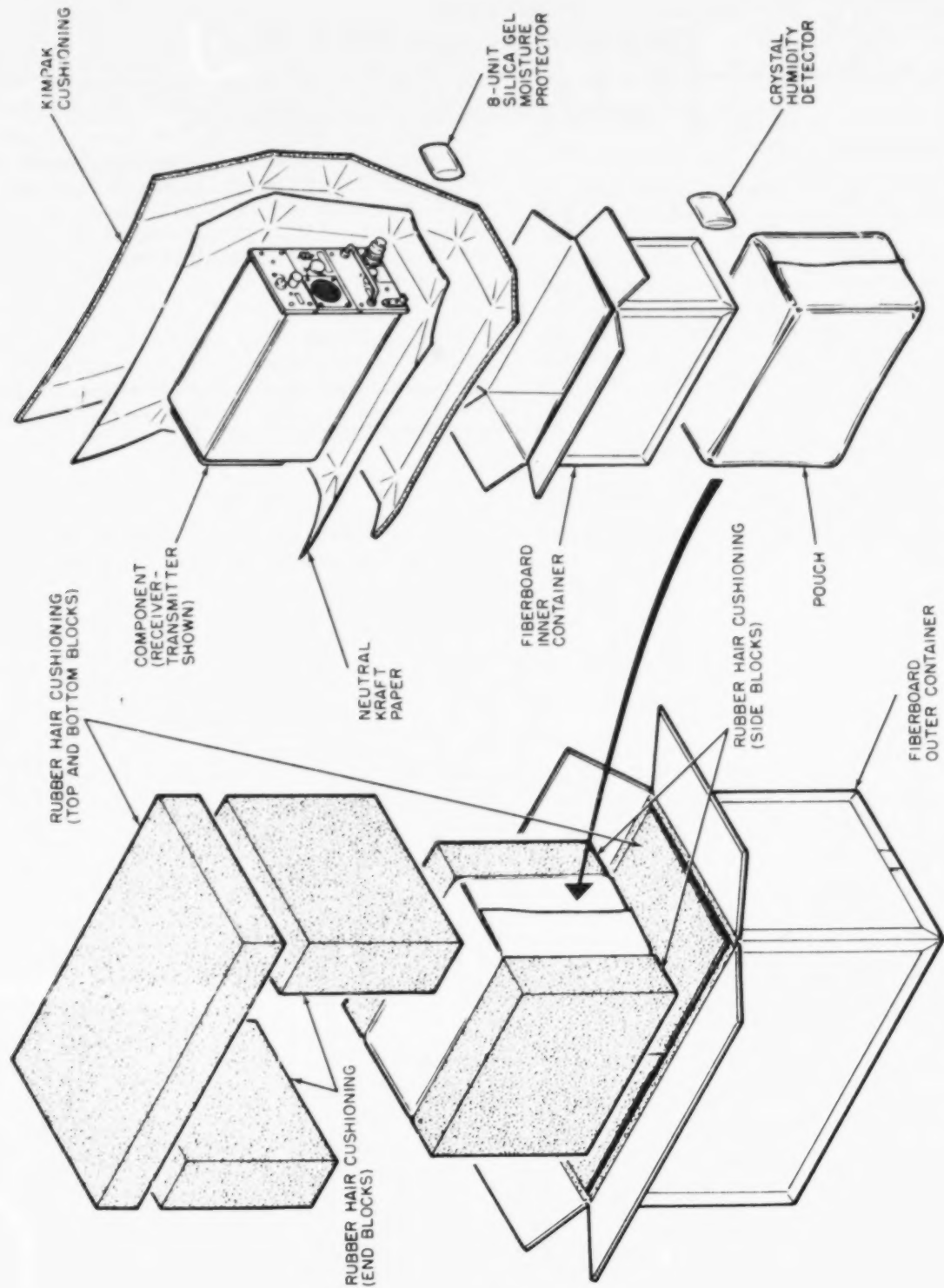
a. Inspect the equipment for damage that may have occurred during shipment. If the equipment has been damaged, fill out and forward DD Form 6 (para 1-3b).

b. Check to see that the equipment is complete as listed on the packing slip. Report all discrepancies in accordance with TM 38-750. The equipment should be placed in service although a minor assembly or part that does not affect proper functioning is missing.

c. Check to see if the equipment has been modified. If the equipment has been modified, the MWO number will appear on the front panel, near the nomenclature plate. Check to see that all current MWO's have been applied.

NOTE

Current MWO's applicable to the equipment are listed in DA Pam 310-7.



2-2 Change 1

Section II. CONTROLS AND INDICATORS

2-3. Damage From Improper Settings

a. *Transmitter Power.* Observe the following caution. Failure to do so may damage or destroy the transmitter parts or cavity.

Caution: Do not apply power to the altimeter set unless transmitter output jack J2 is connected to the antenna or to a 50-ohm dummy load or the transmitter shorting cap on test and calibration connector J4 is removed.

b. *System Power Connector.* Observe the following caution.

Failure to do so may result in shorting ac or dc primary power to ground and cause permanent damage to aircraft components.

Caution: Make sure that all power is off before removing or installing equipment power and signal connectors.

2-4. Operating Controls and Indicators

a. *Height Indicator.* The controls, connectors, and indicators of the height indicator are listed in the chart below and shown in figure 2-2.

Control, connector, or indicator	Function
J1 (rear of component) PUSH TO TEST, OFF, SET control.	Power and signal connector to receiver-transmitter and aircraft systems.
Power OFF switch	a. Applies 115-vac power to height indicator and receiver-transmitter circuits when rotated clockwise from OFF position. b. Removes 115-vac power from height indicator and receiver-transmitter circuits when rotated fully counterclockwise.
Low index SET control. PUSH TO TEST switch.	Positions the low altitude warning index on the height indicator to the desired altitude at which the low altitude warning is desired. Energizes the push-to-test circuit (self-test) in the receiver-transmitter.
Power off NO TRACK flag.	a. When yellow-black striped flag is visible in height indicator dial (other than during preflight warmup procedures), power is off or track is lost. b. When the flag is solid color (black), power is applied and track is maintained.
LOW warning lamps	When the LOW warning lamps in the lower right-hand corner of the height indicator are lighted, the low altitude warning point (as set by low index SET control) has been reached.
NO TRACK mask	When the dial pointer is behind the mask, it indicates that aircraft altitude is above 5,000 feet.

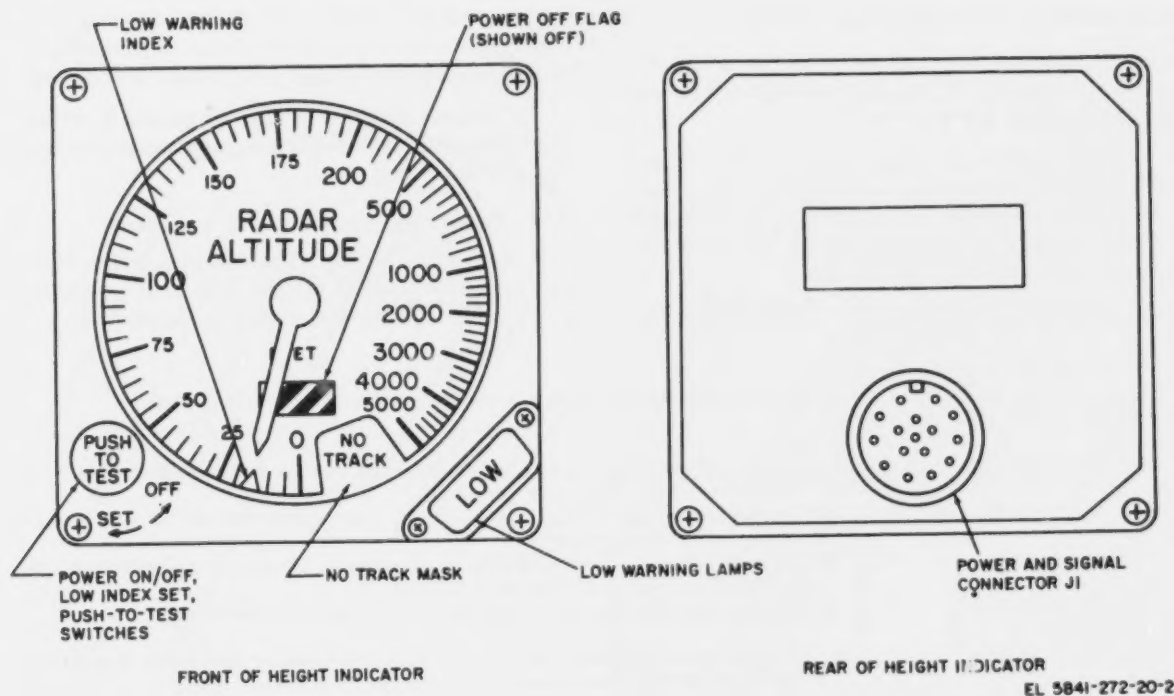


Figure 2-2. Indicator, Height ID-1345A/APN-171(V) controls, indicators, and connectors.

b. *Receiver-Transmitter.* The controls, connectors and indicators of the receiver-transmitter are

listed in the chart below and are illustrated in figure 2-3.

Control, connector, or indicator	Function
Receiver RF input connector J3	Connects receiver antenna to receiver input.
Receiver LO tuning screw	Adjusts receiver to frequency of transmitter output.
Receiver transmitter power/signal input connector J1.	Provides input power and signal connections to the height indicator.
Elapsed time meter	Indicates total time in hours that power has been applied to receiver-transmitter.
Transmitter test connector J4	Provides test points for checking transmitter module. Must have shorting cap (shown installed in fig. 2-3) installed to operate transmitter.
Transmitter RF output connector J2.	Connects the transmitter to the transmitter antenna through the rfi filter. Must be connected to antenna or dummy (50-ohm RF load) antenna when power is on and shorting cap is installed on connector J4.
Fan outlet screen	Air exhaust port for cooling air (blower and fan directly behind screen).

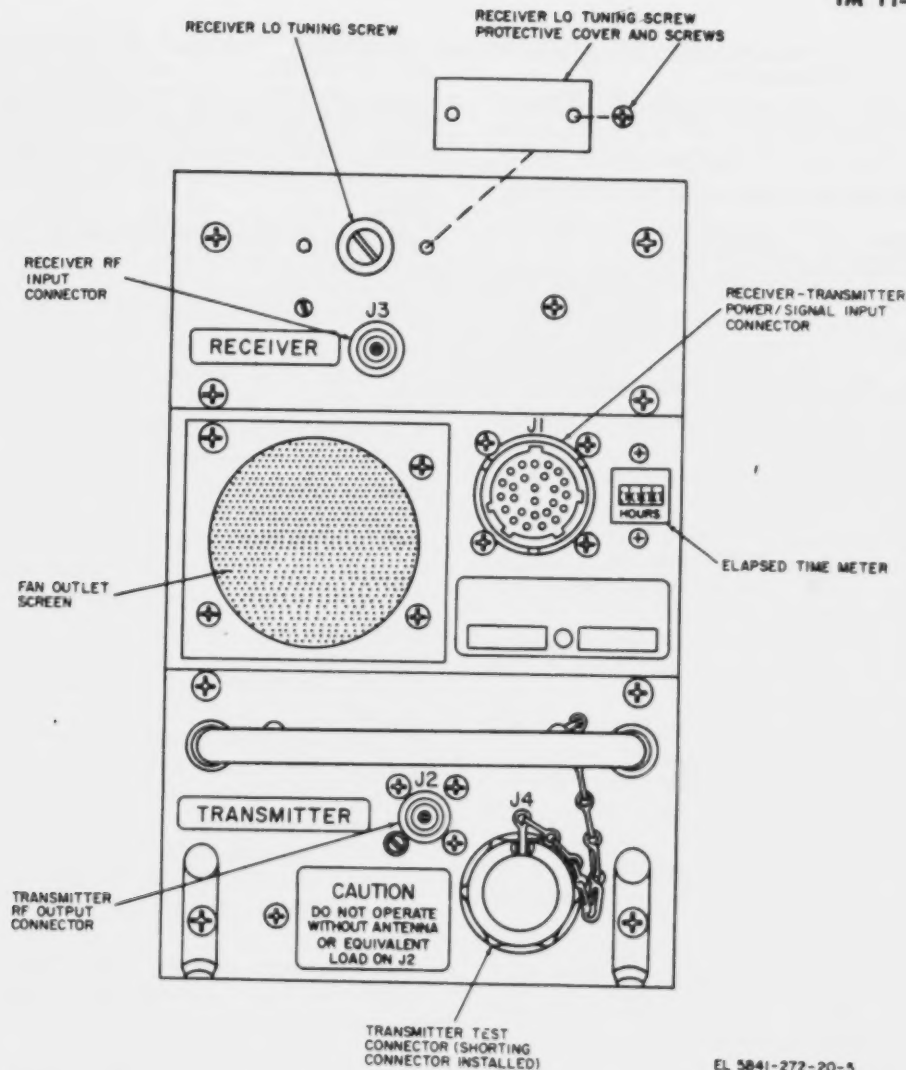


Figure 2-3. Receiver-Transmitter, Radar RT-804A/APN-171(V) controls, indicators, and connectors.

Section III. OPERATION UNDER USUAL CONDITIONS

2-5. Preoperating Procedures

a. *Control Settings.* Make sure that the height indicator OFF switch is at OFF (fully counter-clockwise).

b. *Connectors.* Make sure that all connectors between components of the altimeter set are installed securely and are safety-wired to prevent loss of connection during flight.

c. *Mounting Hardware.* Make sure that all mounting screws, washers, nuts, thumbscrews, and wingnuts are securely fastened. These items

hold the components in position and prevent movement during flight. Make sure that the thumbscrews and wingnuts are safety-wired.

2-6. Operating Limitations

a. *Altitude.* The altimeter set will not provide altitude indications above 5,000 feet. Track of terrain and altitude indications below 5,000 feet will be provided if the altitude does not increase or decrease faster than 2,500 feet per second.

b. *Humidity.* Do not operate the altimeter set if the relative humidity exceeds 90 percent unless

the altimeter system components are protected against moisture condensation.

c. Temperature. Do not operate the altimeter set at temperatures below -55°C (-67°F) or above $+55^{\circ}\text{C}$ ($+131^{\circ}\text{F}$) unless the components are protected against these extremes during operation.

2-7. Preliminary Control Settings

Make sure the height indicator OFF switch is at OFF (fully counterclockwise) before energizing aircraft power.

2-8. Starting and Preflight Procedure

a. Starting. Energize the altimeter set in the following manner:

- (1) Close the aircraft power circuit breaker to apply power to the altimeter set.

- (2) Set the height indicator OFF switch to the on (clockwise from OFF) position.

b. Preflight Tests. Perform the following preflight checks of the altimeter set.

- (1) Check the dial of the height indicator. All numbers and graduations on the dial face shall be clearly illuminated.

- (2) The power off NO TRACK (striped) flag shall remain visible, and the dial pointer on the height indicator shall remain behind the NO TRACK mask for 2 to 3 minutes after power is applied in the starting procedure. The pointer will then rotate to the 0 ± 5 -foot graduation on the height indicator dial, and the flag will disappear from view.

- (3) Set the low warning index to 50 feet on the height indicator by rotating the SET knob. The LOW warning lamps at the lower right-hand corner of the height indicator shall light.

- (4) Press and hold the PUSH TO TEST switch on the height indicator. The height indicator pointer shall indicate 100 ± 15 feet. The LOW warning lamps shall go out.

- (5) Release the PUSH TO TEST switch. The pointer shall return to zero, and the LOW warning lamps shall light.

- (6) If the aircraft is not used immediately, set the height indicator OFF switch to OFF (fully counterclockwise). The power off NO TRACK flag shall appear on the indicator dial face. The dial shall remain lighted until the aircraft control panel lighting switches are turned off.

2-9. In-Flight Procedure

In-flight tests of the altimeter system may be performed at any time to check the altimeter set components.

a. Initial Procedure. If the altimeter set power was turned off, repeat the starting procedure in paragraph 2-8a. If power is on and the altimeter set is tracking the terrain (striped flag does not show, pointer indicates altitude between 0 and 5,000 feet), check the push-to-test function in *b* below.

b. Push-To-Test Check. Test the altimeter set components as follows:

- (1) Press and hold the height indicator PUSH TO TEST switch.

- (2) The height indicator shall indicate 100 ± 15 feet unless actual aircraft altitude is between 75 and 125 feet. At actual altitudes in this range, the receiver-transmitter might not transfer track from the terrain target to the simulated (push-to-test) target.

- (3) Release the PUSH TO TEST switch.

c. Low Warning Check. Check the LOW warning lamps and low warning switch as follows:

- (1) Position the low warning index on the height indicator dial to 800 feet using the SET control.

- (2) Increase aircraft altitude to 1,000 feet or more.

- (3) Decrease altitude to 700 feet. The LOW warning lamps shall light when the height indicator pointer comes directly adjacent to the 800-foot dial graduation.

- (4) Increase aircraft altitude from 700 feet to 1,000 feet. The LOW warning lamps remain lighted until the aircraft altitude is 800, $+55 - 0$, feet.

d. Maximum Altitude Acquisition. Check the capability of the altimeter set to acquire the terrain echo pulses at altitudes above the height indicator dial readings as follows:

- (1) Increase the aircraft altitude to 8,000 feet or more. The off NO TRACK (striped) flag appears on the front of the height indicator and the dial pointer is behind the NO TRACK mask.

- (2) Decrease aircraft altitude slowly toward 4,000 feet. Observe the dial pointer and the flag.

- (3) When the aircraft altitude is between 5,500 and 5,000 feet, the off NO TRACK disappears and the dial pointer begins to move from behind the NO TRACK mask, indicating that the terrain echo pulse has been acquired.

2-10. Postflight Procedure

Perform the test of paragraph 2-8. On satisfactory completion of the tests, set the height indicator OFF switch fully counterclockwise to OFF, and open aircraft circuit breaker for the altimeter set

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-11. Operation Under Emergency Conditions

The altimeter set is an altitude indicating device, and no emergency operating procedures are required.

2-12. Operation Under Extreme Climatic Conditions

Check for dust and moisture accumulation in and

around components, connectors, cables and mounting areas at the start of each day's operation in dusty or tropical conditions. If excessive moisture or dust has accumulated in the component area, remove the component for thorough cleaning and testing.

CHAPTER 3

ORGANIZATIONAL MAINTENANCE

Section I. GENERAL

3-1. Scope of Organizational Maintenance

The maintenance duties assigned to the organizational maintenance repairman of the altimeter set are listed below, together with a reference to the paragraphs covering the specific maintenance function. The duties include preventive maintenance servicing, inspecting, and testing the altimeter set components. These procedures do not require special tools or test equipment other than those in paragraph 3-2.

- a. Intermediate maintenance checks and service (para 3-5).
- b. Cleaning (para 3-6).
- c. Touchup painting (para 3-7).
- d. Power-on inspection (para 3-9).
- e. Periodic maintenance checks and service (para 3-11).
- f. Troubleshooting (para 3-13, 3-14, 3-15).
- g. Removal procedures (para 3-16).
- h. Replacement procedures (para 3-17).

3-2. Tools, Test Equipment, and Materials Required

The tools, test equipment, and materials required

to perform checks of and service to the altimeter set at organizational maintenance are listed in *a* through *c* below.

a. Tools. Use the tools included in Tool Kit, Electronic Equipment TK-105/G (FSN 5180-610-8177) and Tool Kjt, Electronic Equipment TK-100/G.

b. Test Equipment. Multimeter AN/URM-105 (FSN 6625-581-2936).

c. Materials. Use the following materials when performing the systematic care and servicing instructions in paragraphs 3-6 and 3-7.

- (1) Fine sandpaper, No. 000.
- (2) Clean, dry, lint-free cloth.
- (3) Soft-bristled brush.
- (4) Cleaning compound (FSN 7930-395-9542).
- (5) Enamel, black, lusterless (FSN 8010-687-3636).
- (6) Enamel, white (FSN 8010-297-2096).
- (7) Antistatic paste (FSN 6850-882-6690).

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-3. Preventive Maintenance

Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in a serviceable condition, prevent breakdowns, and assure maximum operational capability. Preventive maintenance is the responsibility of all categories of maintenance concerned with the equipment and includes the inspection, testing, and replacement of parts or units that inspection and checks indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the altimeter set at organizational maintenance are made at intermediate and periodic intervals unless otherwise directed by the commanding officer. The maintenance services should be performed concurrently

with the inspection schedules of the aircraft.

a. Systematic Care. The procedures given in paragraphs 3-6 and 3-7 cover the routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Maintenance Checks and Services. The maintenance checks and services chart outlines inspections to be made at specific intervals. These inspections are made to determine combat serviceability; that is, to determine that the equipment is in good general condition, in good operating condition, and likely to remain combat-serviceable. To assist the organizational maintenance repairman in determining and maintaining combat serviceability, the charts indicate what to inspect, how to inspect, and what the normal indications are. The

Paragraph reference column lists the appropriate references and also contains corrective data. If the defect cannot be remedied by the organizational maintenance repairman, a higher category of maintenance or repair is required. Records and reports of these inspections must be made in accordance with TM 38-750.

3-4. Intermediate Maintenance Checks and Services

The intermediate maintenance checks and services provide verification of satisfactory operation at intervals between the periodic inspections. The interval at which the intermediate inspection shall be accomplished is 25 flying hours. The intermediate inspection is performed concurrently with

the intermediate maintenance performed on the aircraft in which the equipment is installed. Adjustments of the maintenance interval shall be made for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have intermediate maintenance performed on aircraft that are in a standby condition. Equipment in limited storage (requires service before inspection) does not require intermediate maintenance.

3-5. Intermediate Maintenance Checks and Services Chart

The chart below lists the intermediate maintenance procedures for the various external features of the altimeter set.

Sequence No.	Item to be inspected	Procedure	Paragraph reference
1	Cables	a. Visually inspect to make sure that cables do not rub on metal or abrasive surfaces. b. Inspect for broken wires and worn insulation. Replace wires or cables which are broken or which have poor insulation.	
2	Connectors	a. Inspect connectors for loose hardware. Remove cable as required to repair connector. b. Make sure that plug mates snugly with equipment jack. Remove safety wire, tighten plug, and replace safety wire as required.	
3	Mountings	a. Make sure that the equipment mounting rack is properly secured to airframe. Check mounting rack (remove receiver-transmitter from rack) for damage to shock mounts, mounting hardware, frame, and thumb-screws. Replace or repair by straightening bent members as applicable. b. Make sure that mounting holes, attaching parts, and airframe mounting surfaces are clean, smooth, and in good working order. Replace worn, stripped, or burred screws and nuts as required. c. Make sure that all required safety wire is in place and correctly installed.	
4	Component surfaces	a. Clean component surfaces as required by climate. b. Inspect components for dents, bends, cracks, or breaks. Replace component if dents are deeper than $\frac{1}{4}$ inch, if the case is excessively distorted, or if cracks or breaks exist in case. c. Inspect components for scratches, chipped paint, rusting, and other signs of abrasion or climatic influence. Replace the component, and clean and touch up the removed component as required.	3-6, 3-7
5	Indicators (receiver-transmitter and height indicator).	a. Inspect the elapsed time meter to determine operating hours. Record the time indicated, and make sure that the meter is working by comparing the time difference indicated to time shown in pilot's log. Replace receiver-transmitter if meter is not working. b. Inspect pointer, graduations, off NO TRACK flag and LOW warning lamps on the front of the height indicator for proper operation and for scratches, worn, or missing legends. Replace height indicator in aircraft if indicators do not perform functions or are otherwise damaged.	3-16, 3-17.

Sequence No.	Item to be inspected	Procedure	Paragraph reference
6	Dust filter (receiver-transmitter only).	Inspect the air filter on the rear of the receiver-transmitter chassis. Brush off dust as much as possible in the aircraft. Remove the receiver-transmitter if the filter is clogged or cannot be cleaned while installed.	
7	Knobs (height indicator only).	Check for cracks, breaks, slippage on mounting shaft, or missing legends. Replace component in aircraft as required.	
8	Switches (height indicator only).	Check for movement of shaft in mounting hole, freedom from binding, proper operation, and proper legends. Replace height indicator as required. Touchup paint may be used on legends.	
9	Dials (height indicator only).	Check the dial face on the height indicator for unclear legends. With power on, see that dial is illuminated and readable. Check protective glass for scratches, cracks, and yellowing. Replace the height indicator as required.	
10	Power-on checks	Check to see that the altimeter set operates in accordance with the power-on checks.	3-8 through 3-10.

3-6. Cleaning

Warning: Prolonged breathing of cleaning compound fumes is dangerous; make sure that adequate ventilation provided. Cleaning compound is flammable; do not use near fire or flame. Avoid contact with the skin; wash off any that spills on your hands.

Caution: Do not use cleaning compound to clean height indicator dial or glass, or LOW warning lamp cover. The compound is abrasive and might damage these parts. Use antistatic paste to clean these items.

Use cleaning compound to remove grease, oil, and other residues from component surfaces during regular cleaning and use it to clean sanded surfaces prior to paint touchup.

3-7. Touchup Painting

a. Remove rust and corrosion from metal surfaces by lightly sanding with No. 000 sandpaper.

b. Remove dust and residues from metal surfaces prior to painting.

c. Brush two thin coats of black, lusterless enamel on the bare metal to protect it from further corrosion.

d. Touch up switch legends on the height indicator and connector legends on the receiver-transmitter with white enamel and a 1/16-inch diameter artist's brush. For detailed cleaning and refinishing practices, refer to TB 746-10. Refer to TM 9-213 for care of painting equipment.

3-8. Preliminary Procedures

Perform the checks and inspections listed in the chart (para 3-5) before turning on aircraft power to the equipment. The equipment shall meet the

requirements given in the chart. When the inspections are completed and discrepancies repaired, perform the power-on checks (para 3-9) and the operating controls and altimeter system operation checks (para 3-10). Refer to troubleshooting (para 3-13 through 3-17) for the corrective action to restore altimeter set operation.

3-9. Power-On Inspection

Refer to the preliminary controls and settings (para 2-7) and the starting procedures in (para 2-8a) as applicable. Inspect component operation as follows:

a. Energize aircraft power or auxiliary power to the altimeter set.

b. Turn the cockpit control panel lighting on. The height indicator lighting shall come on, and the dial graduations and numbers shall be clearly legible in darkness.

c. Inspect the height indicator dial face. The power off NO TRACK (striped) flag shall be showing on the dial face, and the dial pointer shall not have moved from its original position.

3-10. Operating Controls and Altimeter Set Checks

Inspect the altimeter set components for proper operation of the controls (para 2-4) and altimeter set response to control settings. Refer to the pre-flight tests (para 2-8b), postflight procedures (para 2-10), and pilot's flight log for results of in-flight testing (para 2-9) and possible failures. The aircraft power and lighting switches shall be on (para 3-9) in the following procedures.

a. Set the height indicator power OFF switch to on (clockwise from OFF).

b. Inspect the receiver-transmitter fan and

blower for operation. The sound shall not be uneven (varying speed) in pitch or as if overloaded. Airflow shall be noticeable at the front outlet of the receiver-transmitter.

c. Inspect the elapsed time meter on the front of the receiver-transmitter. It shall be operating.

d. Set the height indicator power OFF switch to OFF (fully counterclockwise). Allow 2 minutes for the time delay in the receiver-transmitter to reset.

e. Set the height indicator power OFF switch to on (clockwise from OFF). The dial pointer shall move behind the NO TRACK mask.

f. Time the receiver-transmitter time delay. The time between setting the power OFF switch to on and the time at which the height indicator power off (striped) flag disappears and the dial pointer begins to move from behind the NO TRACK mask shall be 2.5 ± 0.5 minutes.

g. Adjust the height indicator SET knob to position the low warning index to the 80-foot graduation on the dial.

h. The height indicator LOW warning lamps shall be lighted.

i. The height indicator dial pointer shall indicate an altitude of 0 ± 5 feet.

j. Press and hold the height indicator PUSH TO TEST switch.

k. The height indicator dial pointer shall indicate an altitude of 100 ± 15 feet.

l. The height indicator LOW warning lamps shall go off.

m. Release the PUSH TO TEST switch. The LOW warning lamps shall light, and the dial pointer shall indicate 0 ± 5 feet.

n. Set the height indicator power OFF switch to OFF (fully counterclockwise).

o. The height indicator power off (striped) flag shall appear on the dial face.

3-11. Periodic Maintenance Checks and Services

In addition to the intermediate maintenance checks and services, periodic maintenance checks and services shall be scheduled in accordance with the requirements of TM 38-750. The altimeter set normally will be part of an aircraft installation. The periodic maintenance checks and services should be scheduled concurrently with the periodic maintenance schedule of the aircraft in which the equipment is installed to reduce out-of-service times to a minimum. Refer to the applicable aircraft technical manual for the hours between service periods. All deficiencies or shortcomings should be immediately reported to a higher category of maintenance as specified in TM 38-750. Equipment that has a deficiency which cannot be corrected by organizational maintenance should be deadlined in accordance with TM 38-750. Perform all checks and services listed in the periodic maintenance checks and services chart (para 3-12) in addition to the intermediate maintenance checks and services (para 3-5).

3-12. Periodic Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	Paragraph reference
1	Component installation.	Check tightness of mounting hardware, connectors, and tiedowns. Check individual components for physical damage.	3-5
2	Publications	Check DA Pam 310-4 to determine the latest issue of the manual. Order new issues or additional equipment publications as required.	1-2
3	MWO's	Check DA Pam 310-7 to determine MWO pertaining to the altimeter set. Obtain new or uninstalled MWO applicable to the altimeter set, and perform the work required. If the MWO required modification to internal parts or assemblies of the altimeter system components, return the component to the next higher maintenance category.	1-2
4	Air filters	Return the receiver-transmitter to direct support maintenance to have the air filter on the rear of the receiver-transmitter cleaned.	
5	Receiver-transmitter	Remove from aircraft, and have complete test and alignment of component performed by direct support maintenance personnel.	
6	Height indicator	Remove from aircraft, and have complete test of component performed by direct support maintenance personnel.	

Section III. TROUBLESHOOTING

3-13. General Troubleshooting Information

Troubleshooting of the altimeter set is based on the power-on performance checks contained in paragraphs 3-9 and 3-10 and the inflight tests given in paragraph 2-9. When an abnormal condition or result is observed, refer to the troubleshooting chart (para 3-14). Perform the checks and corrective actions indicated in the troubleshooting chart. If the corrective measures indicated do not correct the trouble, higher category maintenance is required.

3-14. Troubleshooting Chart

Warning: Before removing or repairing a component or cable, turn off all aircraft ac and dc

power to the aircraft systems. Failure to do so may result in damage to the equipment or injury to the repairman.

When an altimeter set trouble has been detected, refer to the troubleshooting chart below to correct the malfunction. The paragraph references given in the *Paragraph reference No.* column of the troubleshooting chart correspond to the paragraph numbers of the performance checks and the flight test. When a malfunction has been detected, all electrical connections should be checked. The corrective action, in most cases, calls for the replacement of a component suspected of being faulty. Paragraphs 3-16 and 3-17 detail the component removal and replacement procedures.

Item No.	Paragraph Reference No.	Symptom	Probable trouble	Corrective action
1	3-9b	Dial lamps do not light.	Faulty lamps in height indicator.	Replace height indicator. Return height indicator to direct support maintenance facility.
2	3-9b	Height indicator dial lamps too dim or dial illegible.	Faulty height indicator.	Replace height indicator. Return faulty height indicator to direct support maintenance facility.
3	3-9c	Height indicator power off NO TRACK flag does not show.	Faulty height indicator.	Replace height indicator. Return faulty height indicator to direct support maintenance facility.
4	3-10b	Receiver-transmitter fan motor does not operate.	a. Faulty height indicator. b. Faulty receiver-transmitter.	a. Check for 115 vac at receiver-transmitter connector J1. If 115 volts not present between pins A and B, replace height indicator. b. Replace receiver-transmitter. If fan and blower still do not operate, replace cable between height indicator and receiver-transmitter. c. Return faulty component to direct support maintenance facility.
5	3-10b	Receiver-transmitter motor operates unevenly or overloads.	Faulty receiver-transmitter.	Replace receiver-transmitter. Return faulty unit to direct support maintenance facility.
6	3-10c	Receiver-transmitter elapsed time meter is not operating.	Faulty receiver-transmitter.	Replace receiver-transmitter. Return faulty unit to direct support maintenance facility.
7	3-10e	Height indicator pointer does not rotate behind NO TRACK mask.	Faulty height indicator or receiver-transmitter.	Wait 3 minutes after power turn-on. If pointer moves or fluctuates from its position, receiver-transmitter is faulty. If pointer holds position, and power off NO TRACK flag disappears from view, height indicator is faulty. If pointer does not change position and power off flag remains visible, receiver-transmitter is faulty, rf cables to antennas or rf filter are faulty, or antennas are faulty.

Item No.	Paragraph Reference No.	Symptom	Probable trouble	Corrective action
7 (Cont.)				Check push-to-test operation. If push-to-test indication is 100 ± 15 feet and track condition is indicated, antennas, rfi filter, or cables to antennas are faulty. Replace one of the units and retest. Continue substituting and testing until fault is corrected. If push-to-test indication is not correct and symptoms remain, replace receiver-transmitter. Return faulty unit to direct support maintenance facility.
8	3-10f	Time delay from power on to track condition not 2.5 ± 0.5 minutes.	Faulty receiver-transmitter.	Replace receiver-transmitter. Return faulty unit to direct support maintenance facility.
9	3-10g	Low warning index cannot be positioned.	Faulty height indicator.	Replace height indicator. Return faulty unit to direct support maintenance facility.
10	3-10h	LOW warning lamps not lighted; height indicator pointer indicates 0 ± 5 feet.	Faulty lamps	Replace height indicator. Return faulty unit to direct support maintenance facility.
11	3-10h	Same as in item 10, except pointer indicates other than 0 ± 5 feet.	Faulty receiver-transmitter.	Replace receiver-transmitter. Return faulty unit to direct support maintenance facility.
12	3-10k	Push-to-test height is other than 100 ± 15 feet.	Faulty receiver-transmitter.	Replace receiver-transmitter. Retest to make sure trouble is corrected. If symptom remains, replace height indicator and retest circuit. Return faulty unit to direct support maintenance facility.
13	3-10l	LOW warning lamps remain lighted.	Faulty receiver-transmitter.	Replace receiver-transmitter. Return faulty unit to direct support maintenance facility.
14	3-10e	Power off NO TRACK flag does not appear on face of height indicator.	Faulty height indicator.	Replace height indicator. Return faulty unit to direct support maintenance facility.

3-15. Supplementary Troubleshooting Information

When a suspected component has been replaced in the aircraft, retest the altimeter set to make certain that the trouble has been corrected before performing other tests or using the altimeter set in flight. If the corrective actions listed in the chart do not correct the trouble, check the aircraft and altimeter set wiring for continuity (see the aircraft wiring schematic diagram in the aircraft configuration manual). Repair faulty wiring according to the procedures provided in the applicable manual.

3-16. Removal Procedures

Remove the altimeter set components from the aircraft according to the following instructions:

a. Removing Receiver-Transmitter.

(1) Open the access panel to the aircraft electronics bay.

(2) Remove the safety wire attaching the front panel connectors and securing the knurled thumbscrews which hold the receiver-transmitter on the mounting rack.

(3) Remove the connectors from the front of the receiver-transmitter panel.

(4) Unscrew the knurled thumbscrews at the base of the receiver-transmitter.

(5) Make sure that all attaching connectors and other hardware are removed or released. Slide the receiver-transmitter off the mounting rack, and remove it from the aircraft.

b. Removing Height Indicator.

(1) Remove the four machine screws (one in each corner) from the front of the height indicator.

(2) Withdraw the height indicator from the aircraft control panel cutout until the rear connector is exposed. Do not strain the cable wiring at the rear of the height indicator.

(3) Remove the safety wire securing the aircraft connector and cable to the connector at the rear of the height indicator.

(4) Remove the cable and connector.

(5) Remove the height indicator from the aircraft.

c. Removing Rfi Filter

(1) Remove the two connectors.

(2) Remove the four machine screws attaching the rfi filter to the airframe.

(3) Remove the rfi filter from the aircraft.

d. Removing Electrical Equipment Rack. The rack is removed by first sliding off the receiver-transmitter and then removing the four machine screws that hold the item to its support.

e. Removing the Antenna. The antenna is removed by taking off 12 machine screws that hold the item to the aircraft.

3-17. Replacement Procedures

Replace components in the aircraft according to the following instructions:

a. Replacing Electrical Equipment Rack. The rack is replaced by screwing it to its supports using four machine screws.

b. Replacing Receiver-Transmitter.

(1) Slide the receiver-transmitter on the mounting rack in the electronics bay. Make sure the receiver-transmitter engages the guide pins at the rear of the mounting rack.

(2) Install and tighten the two knurled thumbscrews over the tabs at the base of the receiver-transmitter front panel.

(3) Safety-wire the two knurled thumbscrews using standard procedures.

(4) Install and tighten the three connectors on the front of the receiver-transmitter, making certain that they are attached to the proper connector on the receiver-transmitter.

(5) Safety-wire the connectors to the receiver-transmitter using standard procedures.

(6) Install the electronics bay access panel.

c. Replacing Height Indicator.

(1) Install and tighten the aircraft connector cable on the height indicator connector. Safety-wire the connector to the height indicator using standard procedures.

(2) Install the height indicator in the aircraft control panel cutout.

(3) Install and tighten the four machine screws (one at each corner) through the front of the height indicator.

d. Replacing Rfi Filter. Replace the rfi filter according to the following instructions:

(1) Install and tighten the two connectors on the rfi filter connectors.

(2) Install the four machine screws in the holes at the corners of the rfi filter, and attach the rfi filter to the airframe. Tighten the four machine screws securely.

(3) Check the connectors and mounting hardware to make certain they are securely attached.

e. Replacing the Antenna. The antenna is replaced by screwing it to the aircraft using 12 machine screws.

3-18. Zero Adjustment.

If a new or repaired receiver-transmitter is being installed, the zero adjustment must first be set to be sure of a zero altitude reading on the indicator. Perform the adjustment as follows:

a. Remove the two screws holding the dust cover to the receiver-transmitter. Remove the cover and place the unit on the mounting rack so the adjustments at the rear of the receiver-transmitter are accessible.

b. Connect the antenna cables and the power and signal cable to the receiver-transmitter. Turn the height indicator OFF switch to the on (clockwise from OFF) position. Allow 2 minutes warm up.

c. The zero adjustment, A2R31, is the lower of the two variable resistors on range computer network card A2 (tracker card A2).

d. Using an insulated screwdriver, adjust A2R31 until zero altitude reading is obtained on the indicators.

e. Turn the height indicator OFF switch to the OFF position. Replace the receiver-transmitter cover and secure it with the two screws originally removed.

CHAPTER 4

SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

4-1. Repackaging of Equipment

Repackaging of equipment for shipment or limited storage is normally performed at a packaging facility or by a packaging team. Should emergency packaging be required, select the materials from those listed in SB 38-100. Package the equipment in accordance with the original packaging (fig. 2-1 and para 4-2), as far as possible with the available materials.

4-2. Packaging Procedure

The procedure used to package each of the five components of the altimeter set is the same. Different sizes of packaging materials shall be used since the dimensions of the various components of the altimeter set differ. Package each component of the altimeter set as follows:

- (1) Wrap the unit in neutral Kraft paper (NSN 8135-00-558-1245).
- (2) Seal the wrapped unit with tape (NSN 8135-00-270-8717).
- (3) Wrap the sealed unit with the Kimpack cushioning material.
- (4) Seal the Kimpack cushioning material joints with tape.
- (5) Place the wrapped and cushioned component in the fiberboard (NSN 8135-00-664-1389)

inner container.

(6) Insert a desiccant bag in the fiberboard inner container. Fill voids with paper or other wadding.

(7) Fold over the lids of the fiberboard inner container, and seal the edges with tape.

(8) Attach the humidity indicator (NSN 6685-00-618-1822) to the outside of the sealed fiberboard inner container.

(9) Insert the fiberboard inner container and humidity indicator in the pouch. Close the open end of the pouch, and heat seal it with a warm (not hot) iron.

(10) Insert the rubber hair (NSN 8135-00-664-0057) cushioning bottom block of the fiberboard outer container.

(11) Place the sealed pouch between the two rubber hair cushioning side blocks, and insert the pouch and blocks into the fiberboard outer container.

(12) Insert the two rubber hair cushioning end blocks at the ends of the fiberboard outer container between the sealed pouch and the fiberboard outer container walls.

(13) Place the top rubber hair cushioning block on the sealed pouch.

(14) Fold over the lids of the fiberboard outer container, and seal with tape.

Section II. DEMOLITION TO PREVENT ENEMY USE

4-3. Authority for Demolition

Demolition of the equipment shall be accomplished only upon order of the commander. Use the destruction procedures outlined in paragraph 4-4 to prevent further use of the equipment.

4-4. Methods of Destruction

The tactical situation and time available will determine the method to be used when destruction of the equipment is ordered. In most cases, it is preferable to demolish some portions of the

equipment completely rather than partially destroy all of the equipment components. The instructions below cover the various methods to be used to destroy the equipment, spare parts, and manuals and documents pertaining to the equipment.

a. Smash. Smash the controls, switches, and internal components; use sledges, axes, handaxes, pickaxes, hammers, or crowbars.

b. Cut. Cut the interconnecting wiring, and slash the RF shields; use axes, handaxes, or machetes.

Warning: Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

c. Burn. Burn the cables and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

d. Bend. Bend the panels and the case.

e. Explode. Use firearms, grenades, or TNT to explode the equipment.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into streams.

4-5. Priorities of Destruction

The altimeter set is unclassified. Destroy the components according to paragraph 4-4 using the following priorities:

Priority	Component
1	Receiver-Transmitter, Radar RT-804A/APN-171(V)1. All manuals and other documents pertaining to the equipment.
2	Antenna AS-1858/APN-171(V).
3	Filter, Band Suppression F-1263/APN-171A(V)1.
4	Indicator, Height ID-1345A/APN-171(V).
5	Base, Shock Mount, Electrical Equipment MT-4167/APN-171(V).

4-6. Report of Destruction

The destruction of the altimeter set shall be reported through command channels. The report shall contain the data required by the controlling procedure and shall be reported on the designated forms.

APPENDIX A REFERENCES

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- The following publications contain information applicable to the operation and maintenance of Altimeter Set, Electronic AN/APN-171A(V)1.
- | | |
|-------------------|--|
| DA Pam 310-4 | Index of Technical Publications: Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders. |
| DA Pam 310-7 | US Army Equipment Index of Modification Work Orders. |
| SB 38-100 | Preservation, Packaging, Packing and Marking Materials, Supplies and Equipment Used by the Army. |
| TB 43-0118 | Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters. |
| TM 11-6625-203-12 | Operator and Organizational Maintenance: Multimeter AN URM-105, Including Multimeter ME-77/U and ME-77C/U. |
| TM 38-750 | The Army Maintenance Management System (TAMMS). |
| TM 43-0139 | Painting Instructions for Field Use. |

APPENDIX C MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations for Altimeter Set, Electronic AN/APM-171A(V)1. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance serv-

ices (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, re-machining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

C-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3 Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time"

figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

- C — Operator/Crew
- O — Organizational
- F — Direct Support
- H — General Support
- D — Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in Section IV, Remarks, which is pertinent to the item opposite the particular code.

C-4. Tool and Test Equipment Requirements (Sec. III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

C-5. Remarks (Sec. IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is C-3)

SECTION II MAINTENANCE ALLOCATION CHART
FOR
ALTIMETER SET, ELECTRONIC AN/APN-171A(V)

1. GROUP NUMBER	2. COMPONENT ASSEMBLY	3. MAINTENANCE FUNCTION	4. MAINTENANCE CATEGORY					5. TOOLS AND EQPT.	6. REMARKS
			C	D	F	H	D		
00	ALTIMETER SET, ELECTRONIC AN/APN-171A(V)	Inspect Test Align Repair		0.1 0.2 0.1 0.2				NONE 1 thru 5 7 8 9	A B
01	RECEIVER-TRANSMITTER RT-804A/APN-171A(V)	Inspect Test Align Replace Repair		0.1 0.1	0.2 0.3 0.2			NONE 1 thru 5 7 8 9	
0101	NETWORK NO.1 (TRACKER CARD A1)	Adjust Replace Test Repair			0.1 0.1		0.5 0.3	7 1 thru 5 9,10 7	
0102	NETWORK NO.2 (TRACKER CARD A2)	Replace Test Repair			0.1	0.5 0.3		7 1 thru 5 9,10 7	
0103	NETWORK NO.3 (TRACKER CARD A3)	Replace Test Repair			0.1	0.5 0.3		7 1 thru 5 9,10 7	
0104	NETWORK NO.4 (TRACKER CARD A4)	Replace Test Repair			0.1	0.5 0.3		7 1 thru 5 9,10 7	
0105	CHASSIS AND FILTER ASSEMBLY	Test Repair				0.3 0.3		7 7	
0106	POWER SUPPLY	Test Replace Repair Align			0.3	0.5 0.3 0.3		1 thru 5 9,10 7 7 7	
0107	TRANSMITTER	Test Replace Repair			0.1	0.5 0.3		1 thru 5 9,10 7	
0108	IF AMPLIFIER	Replace Test Repair			0.1	0.5 0.3		7 1 thru 5 9,10 7	
0109	RECEIVER	Replace Test Repair			0.1	0.5 0.3		7 1 thru 5 9,10 7	
02	INDICATOR, HEIGHT ID-1345A/APN-171A	Inspect Test Replace Repair		0.1 0.1 0.1			8.0	NONE 2 2 4, 11 thru 27	A
03	ANTENNA AS-1858/APN-171A(V)	Inspect Replace		0.1 0.3				NONE 8	
04	FILTER, BAND SUPPRESSION F-1263/APN-171A(V)	Inspect Replace		0.1 0.3				NONE 8	
05	ELECTRICAL EQUIPMENT RACK (BASE, SHOCK MOUNT) MT-4167/APN-171A(V)	Inspect Replace Repair		0.1 0.2	0.3			NONE 8 7	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR

ALTIMETER SET, ELECTRONIC AN/APM-171A(V)1

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL NATO STOCK NUMBER	TOOL NUMBER
1	F,H,D	VOLTMETER ME-202B/U	6625-00-972-4046	
2	F,H,D	OSCILLOSCOPE AN/USM-281A	6625-00-228-2201	
3	F,H,D	MULTIMETER AN/USM-223	6625-00-999-7465	
4	F,H,D	SYSTEM TEST SET AN/APM-323	6625-00-491-0580	
5	H,D	MODULE TEST SET AN/APM-322	6625-00-437-7312	
6	O	TOOL KIT TK-105/G	5180-00-610-8177	
7	F,H,D	TOOL KIT TK-100/G	5180-00-605-0079	
8	H,D	VOLTMETER, DIGITAL AN/GSM-64	6625-00-870-2264	
9	H,D	WATTMETER AN/URM-98	6625-00-566-4990	
10	H,D	GENERATOR, SIGNAL AN/URM-52B	6625-00-965-1501	
11	D	TEST BOARD JG206F27 (94580)	NSN	
12	D	HOLDING FIXTURE JG206F32 (94580)	NSN	
13	D	INDICATOR TESTER JG206F600 (94580)	NSN	
14	D	ADAPTER, CONNECTOR 21900 (02660)	NSN	
15	D	POINTER CRIMPER 972445T2 (94580)	NSN	
16	D	BUSHING TOOL 972456T1 (94580)	NSN	
17	D	PRESS 972456T13 (94580)	NSN	
18	D	COUPLER ADAPTER 972456T15 (94580)	NSN	
19	D	WIPER HEIGHT TOOL 972456T17 (94580)	NSN	
20	D	DIAL REMOVAL TOOL 972456T18 (94580)	NSN	
21	D	CEMENTING TOOL 972456T2 (94580)	NSN	
22	D	COUPLER TOOL 972456T4 (94580)	NSN	
23	D	DIAL TOOL 972456T6 (94580)	NSN	
24	D	BRUSHING TOOL 972456T8 (94580)	NSN	
25	D	DIAL ALIGNMENT TOOL 972456T9 (94580)	NSN	
26	D	DIAL WIPER HEIGHT TOOL 972456T4 (94580)	NSN	
27	D	INSULATION TESTER ME36T (40817)	NSN	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	SELF TEST
B	REPLACE BLACK BOX
C	REPAIR BY REPLACING MODULES/SUBASSEMBLIES

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS	
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL			REBUILD
1A8TB3	AN/APN-171A(V)1 (continued) POWER SUBASSEMBLY NO. 3	F	H	F									42 6,10 thru 13, 42 42 42 42 42	Test as part of power supply
1A9	TRANSMITTER	F	H	F			H						42 6,10 thru 13, 42,44,45 6,10 thru 13, 42 42 44,45	Align pulse width and pulse repetition rate Replace cavity, No. 1 and No. 2 Networks
1A9TB1	NO. 1 TRANSMITTER MODULE NETWORK	H	H	H								D	42 1 thru 7,11, 15,17,43,44, 45 6,10 thru 13, 42 42 42 42 42	

MAINTENANCE ALLOCATION CHART													
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL		
1A9TB2	AN/AFN-171A(V)1 (continued) NO. 2 TRANSMITTER MODULE NETWORK	H	H	H					H	H	H	42 6,10 thru 13 42 42 42 42 42	Replace defective components
1A9TB3	TRANSMITTER FRAME ASSEMBLY	H	H	H								42 6,10 thru 13 42 42 42 42 42	
1A9TB3A	A MODULE	H	H	H								42 6,13,14,15, 42 42 42 42	
1A9TB3B	B MODULE	H	H	H								42 6,11,12,13, 42 42 42 42 42	

MAINTENANCE ALLOCATION CHART												
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	
1A5K1	AN/APW-171A(V)1 (cont) OSCILLATOR CAVITY	H	H	H		D			H			42 6,10 thru 13, 42 42 4,6,7,10,15, 42 Align FREQ
1A10	I-F AMPLIFIER	F	H	F					F	H	H	42 6,10 thru 13, 42 42 42 6,10 thru 13, 42
1A10T81	AMPLIFIER AND DETECTOR	H	H						H	H	H	42 6,10 thru 13, 42 42 42 6,10 thru 13, 42 Test as part of i-f amplifier
1A11	RECEIVER	F		F		F			F	H	D	6,10 thru 13, 42,44,45 42 42 44,45 1,2,3,5,7,8, 9,11,14,15, 42,44,45 1,2,3,5,7,8, 9,11,14,15, 42,44,45 Align local oscillator only Replace defective components

MAINTENANCE ALLOCATION CHART													
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	
1A11T1	AN/APN-171A(V)1 (continued) OSCILLATOR CAVITY	H	H	H								42 6,10 thru 13, 42 42 42	Test as part of receiver
1A11H1	MIXER	H	H	H					H			42 6,10 thru 13, 42 42	Test as part of receiver
1A11(TB1)	ASSEMBLY, TERMINAL PLATE	H	H	H					H			42 11,42 42 42 42 11,42	(NOTE: May be a throwaway item)
2	INDICATOR, HEIGHT ID-1345A/APN-171(V)	O	F	O		D						41 6,11,12,42 41 16 thru 39, 42 41 41 42	Repair low altitude warning light only
									O	F	D	6,16 thru 39, 42 42 6,18 thru 39, 42	
												D	

MAINTENANCE ALLOCATION CHART

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS	
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL			REBUILD
2A1	AW/APN-171A(V)1 (continued) LIGHTING ASSEMBLY	P	P										42 42 42	
2A2	GEAR ASSEMBLY	D		D		D			D	D			42 42 42 42 42 42 6, 16 thru 39 42 42	
2A3	GAIN SELECTOR SWITCH	D	D					D					42 42 42 42 42 6, 16 thru 39 42 42 42	
2TB1	BOARD ASSEMBLY	D	D							D			42 42 42 42 42 42 6, 16 thru 39 42 42 42	

MAINTENANCE ALLOCATION CHART														
GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS	
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL			REBUILD
2TB2	AN/AFN-171A(V)1 (continued)	D	D										42 42 42 42 42 42 42 42 6, 16 thru 39, 42 42	Test by substitution
	REAR BOARD ASSEMBLY			D		D			D	D	D			
3, 4	ANTENNA AS-1858/AFN-171(V)	O		O									41 41 41	Test by substitution
5	FILTER, BAND SUPPRESSION F-1263/AFN-171A(V)1	O	F	O					O				41 42 41 41	Test by substitution
6	BASE, SHOCK MOUNT, ELECTRICAL EQUIPMENT MT-4167/AFN-171(V)	O		O					O	O			41 41 41 41	Repair by replacing isolators

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	D	AN/APN-171A(V)1 (continued)		
2	D	ADAPTER, Model 79825 (F/M to M/TNC) FXR Division of Amphelol Borg		
3	D	ADAPTER, Model 79675 (M/TNC to F/BNC) FXR Division of Amphelol Borg		
4	D	ADAPTER, Model 31-218 (M/BNC to M/BNC) FXR Division of Amphelol Borg		
5	D	ATTENUATOR, Model 9684-505 (0 to 50 db) Arra, Inc.		
6	F,H	COAXIAL TEE, Model 1021 (M/submin to F/submin to M/submin), Micon Electronics, Inc.	6625-731-7914	
7	D	VOLTMETER, ELECTRONIC ME-202B		
8	D	DIRECTIONAL COUPLER, Models 3044-10 and 3044-20, Narda Microvave Corp.		
9	D	I-F amplifier, Model EL502-T12, RHG Electronics Laboratory, Inc.		
10	F,H,D	LOW PASS FILTER, Model LA-50M, Microlab, Inc.		
11	F,H,D	OSCILLOSCOPE, AN/USM-281	6625-093-3112	
12	F,H	MULTIMETER, TS-352B/U OR AN/USM-223 when available	6625-553-0142 6625-999-7465	
13	H	SYSTEM TESTER ASSY, P/N 1995950-1, Honeywell Inc., Aerospace Division		
14	D	MODULE TESTER ASSY, P/N 1995940-1, Honeywell Inc., Aerospace Division		
15	D	RIGHT ANGLE ADAPTER, Model 31-009 (F/BNC to M/BNC) FXR Division of Amphelol Borg		
16	D	TEST SET, RECEIVER-TRANSMITTER CALIBRATION STATION, Model HG7091-F1300, Honeywell Inc., Aerospace Division		
17	D	TEST SET, HEIGHT INDICATOR CALIBRATION AND RUN-IN STATION, Model JG206-F600 Honeywell Inc., Aerospace Division		
18	D	HOLDING FIXTURE, HEIGHT INDICATOR VIBRATION TEST FIXTURE, Model JG206-F32, Honeywell Inc., Aerospace Division		
19	D	AC INSULATION TESTER, Model ME-36T Milwaukee Electric Co.		
	D	DIELECTRIC TEST BOARD, Model JG206-F27, Honeywell Inc., Aerospace Division		

TOOL AND TEST EQUIPMENT REQUIREMENTS			
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER
20	D	AN/APN-171A(V)1 (continued)	
21	D	LIGHT CENTERING FIXTURE, P/N 972450-T11, Honeywell Inc., Aerospace Division	
22	D	BUSHING TOOL, P/N 972456-T1, Honeywell Inc., Aerospace Division	
23	D	CEMENTING FIXTURE, P/N 972456-T2, Honeywell Inc., Aerospace Division	
24	D	COUPLER TOOL, P/N 972456-T4, Honeywell Inc., Aerospace Division	
25	D	DIAL TOOL, P/N 972456-T5, Honeywell Inc., Aerospace Division	
26	D	BUSHING TOOL, P/N 972456-T6, Honeywell Inc., Aerospace Division	
27	D	DIAL ALINE TOOL, P/N 972456-T9, Honeywell Inc., Aerospace Division	
28	D	CEMENTING FIXTURE, P/N 972456-T11, Honeywell Inc., Aerospace Division	
29	D	GRAM GAGE, 6070A, Honeywell Inc. Aerospace Division	
30	D	MASK, JG132-T5, Honeywell Inc., Aerospace Division	
31	D	TORQUE ADAPTER, JG2X6-15, Honeywell Inc., Aerospace Division	
32	D	TORQUE ADAPTER, JG2X6-T6, Honeywell Inc., Aerospace Division	
33	D	TORQUE WRENCH, UG150A, Honeywell Inc. Aerospace Division	
34	D	TORQUE WRENCH, UG150M, Honeywell Inc. Aerospace Division	
35	D	FILL TUBE (Locally manufactured)	
36	D	VACUUM HOSE AND GENERATOR, STANDARD LOW VACUUM LINE FOR REMOVAL OF DUST, (7 inches or less mercury)	
37	D	VACUUM CHAMBER, Model 5840, National Appliance Co., Portland, Ore.	
38	D	CLEAN TRAYS AND DESICCANT	
39	D	MASS SPECTROMETER, Model NG-9C, Vacuum Electronic Corp., Plainview, N. Y.	
40	P,H,D	VIBRATION TABLE, Model VA-D, All American Co. Ltd. ZERO CALIBRATION CARBZ	

TOOL AND TEST EQUIPMENT REQUIREMENTS			
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER
41	O	AN/APN-171A(V)1 (continued)	
42	F, H, D	TOOL KIT, ELECTRONIC REPAIRMAN TK-105/G	5180-610-8177
43	O	TOOL KIT, ELECTRONIC REPAIRMAN TK-100/G	5180-605-0079
44	H, D	MULTIMETER AN/URM-105	6625-581-2036
45	H, D	WATTMETER AN/URM-98	6625-566-990
		GENERATOR, SIGNAL AN/URM-52B	6625-965-1501

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PUBLICATION DATE

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GRAPH

FIGURE
NO.

TABLE
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33

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19

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For item 2, change the NSN to read: 5835-00-134-9186.
Reason: Accuracy.

Identify the cover on the junction box (item no. 5).
Reason: It is a separate item and is not called out
on figure 19.

Add the cover of the junction box as an item in the
listing for figure 19.
Reason: Same as above

SAMPLE

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AN/APN-171A(V)1

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TABLE 1

FIGURE 40

TABLE 1
continued

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The Adjutant General.*

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